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(54) Title: THERAPEUTIC AND DIAGNOSTIC AGENTS FOR THE TREATMENT OF MICROBIAL INFECTIONS

(57) Abstract

Therapeutic peptides, vaccines and diagnostic agents for the treatment of pathogenic infections.

FOR THE PURPOSES OF INFORMATION ONLY

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/18796

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A61K 35/12, 35/66; 38/17, 39/02; C07K 2/00, 4/04, 4/12
US CL :424/184.1, 520; 435/243; 514/ 2, 8; 530/300, 350
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/184.1, 520; 435/243; 514/ 2, 8; 530/300, 350

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, DIALOG, BIOSIS, CA, EMBASE, MEDLINE, WPI
search terms: elam, e-selectin, bacteri?, microorganism?, mimic?

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,081,034 A (BEVILACQUA et al.) 14 January 1992, see entire document.	1-8, 34-36, 38, 39, 41, 47,48 ---------- 50-54
X --- Y	WO 94/05269 A1 (CENTOCOR, INC.) 17 March 1994, see entire document.	1-8, 34-36, 38, 39, 41, 45, 47, 48 ---------- 50-54
X --- Y	WO 92/02817 A1 (BIOCARB, INC.) 20 February 1992, see entire document.	50-54 ---------- 1-8, 34-36, 38, 39, 41, 45, 47, 48

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 28 MARCH 1997	Date of mailing of the international search report 09 JUN 1997
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer PHILLIP GAMBEL Telephone No. (703) 308-0196

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International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Glycoconjugate Journal, Volume 11, issued 1994, SANDROS et al., "Lectin Domains in the Toxin of Bordetella Pertussis: Selectin Mimicry Linked to Microbial Pathogenesis", pages 501-506, see entire document.	1-8, 34-36, 38, 39, 41, 45, 47, 48

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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-8, 34-36, 38, 39, 41, 45, 47, 48, 50-54

Remark on Protest

☒ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art. The special technical feature of the instant application is an attachment molecule including proteins and glyconjugates or a member of a receptor-ligand pair (e.g. adhesion molecule, cytokine, etc.). The disclosed and claimed attachment molecules were known in the prior art as evidenced by Ward et al. (Agents Action 43/Suppl. 173-186, 1993); therefore the multiple species of attachment molecules do not have unity of invention.

I. This application contains claims directed to the following distinct species, wherein the attachment molecule is selected from the group consisting of:(1)proteins, glycoproteins, (2) glycolipids or (3) carbohydrates.

These species do not share the same or corresponding special technical feature because these species are distinct because their structures and modes of action are different which, in turn, address different pathological conditions and therapeutic endpoints.

II. This application contains claims directed to the following distinct species, wherein the targeted host cells for an attachment molecule is selected from the group consisting of:
(1)leukocytes, (2)endothelial cells, (3)epithelial cells, or (4) cells of the nervous system. These species do not share the same or corresponding special technical feature because these species are distinct because these targeted structures and modes of action are different which, in turn, address different pathological conditions and therapeutic endpoints.

III. In addition to choosing a targeted cell type, this application contains claims directed to the following distinct species, wherein the targeted ligand is selected from the group consisting of:(1)N-acetylneuraminic acid, (2)sialic acid, (3) N-acetylglucosamine or glucosamine, (4)N-acetylgalactosamine or galactosamine, (5)galactose, (6)mannose, (7)fucose or (8) lactose.

These species do not share the same or corresponding special technical feature because these species are distinct because their structures and modes of action are different which, in turn, address different pathological conditions and therapeutic endpoints.

IV. If applicant elects a protein/glycoprotein, this application contains claims directed to the following distinct species, wherein the attachment molecule is selected from the group consisting of: (1)selectin or integrin,(2)cytokine, (3) chemokine, or (4)GTP-binding protein.
These species do not share the same or corresponding special technical feature because these species are distinct because their structures and modes of action are different which, in turn, address different pathological conditions and therapeutic endpoints.

V. If applicant elects a GTP-binding protein, this application contains claims directed to the following distinct species, wherein the attachment molecule is selected from the group consisting of: (1)Rho, (2)Ras, (3)Rac, (4)Cdc42, (5)Rab, (6)Ran or (7) Arf.

These species do not share the same or corresponding special technical feature because these species are distinct because their structures and modes of action are different which, in turn, address different pathological conditions and therapeutic endpoints.

VI. If applicant elects a selectin/integrin then this application contains claims directed to the following distinct species, wherein the attachment molecule is selected from the group consisting of: (1)E-selectin, (2)P-selectin, (3)L-selectin, (4)VLA-1, (5)VLA-2, (6)VLA-3, (7)VLA-4, (8)VLA-5, (9) VLA-6, (10)Mac-1, (11)LFA-1, (12)gp150.95, (13)CD41a, (14)CD49, (15)CD51, (16)ICAM-1, (17)ICAM-2, (18)ICAM-3, (19)VCAM, (20) NCAM or (21)PECAM.

These species do not share the same or corresponding special technical feature because these species are distinct because their structures and modes of action are different which, in turn, address different pathological conditions and therapeutic endpoints.

VII. This application contains claims directed to the following distinct species, wherein the attachment molecule is selected from the group consisting of the microbes selected from the group of:(1) E. coli, (2) Salmonella, (3) Shigella, (4) Pseudomonas, (4) Proteus, (5) Klebsiella, (6) Aerobacter, (7) Heliobacter, (8) Plasmodium, (9) Brucella, (10) Pasteurella, (11) Leishmania, (12) Trypanosoma, (13) Mycobacterium TB, (14) Legionella, (15) Staphylococcus, (16) Streptococcus, (17) Bordetella, (18) Hemophilus, (19), Aspergillus, (20) Cryptococcus, (21) Candida, (22) Histoplasma,

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(23) Coccidioides, (24) Phycomycetes, (25) Entamoeba, (26) Giardia, (27) Cryptosporidium, (28) Neisseria, (29) Chlamydia, (30) Treponema, (31) Trichomona, (32) Tritrichomonas, (33) Influenza A, (34) Influenza B, (35) Influenza C, (36) Measles, (37) Mumps, (38) Adenovirus, (39) Rhinovirus, (40), Poliovirus, (41) Hepatitis, (42) Hantavirus, (43) Herpesvirus, (44) Rubella, (45) HIV, Coxsackievirus, (46) Coryncbacterium, (47) Clostridium, (48) Yersinia, (49) Vibrio, (50) Entamoeba or (51) Hafnia.

These species do not share the same or corresponding special technical feature because these species are distinct because their structures and modes of action are different which, in turn,address different pathological conditions and therapeutic endpoints.

Applicant should elect a species from (I), (II) and (VII) as a single group and in addition, select an additional species from (III), (IV), (V) or (VI) as appropriate.